

Notes on the revised taxonomic position of the Black Wishbone spider *Dekana diversicolor* Hogg (Mygalomorphae: Dipluridae)

by Barbara York Main

Zoology Department, University of Western Australia, Nedlands, W.A. 6009

Manuscript received 19 August 1980; accepted 17 February 1981

Abstract

The common diplurine species *Dekana diversicolor* Hogg of which the holotype is lost, has long been identified on a combination of male characters and the distinctive Y-or wishbone-shaped burrow. The stated type locality, Deka station, cannot be traced, thus association of this biologically distinct species with a topotypic population cannot be made. In the interests of maintaining nomenclatural stability a neotype for *Dekana diversicolor* Hogg is designated and a new type locality 26 km north-west of Elliston, South Australia, chosen. On morphological criteria *Dekana* cannot be separated from *Aname* Koch, therefore *D. diversicolor* is transferred to *Aname* and *Dekana* becomes a synonym of *Aname*. *Chenistonia* (*Dekana*) *atra* Strand, the type species of *Sugenia* Rainbow and Pulleine, is synonymised with *Aname diversicolor* (Hogg) and *Sugenia* is also placed in synonymy with *Aname*.

Introduction

The common diplurine spider, the Black Wishbone spider, for long identified as *Dekana diversicolor*, is widespread, although rarely occurring abundantly, in southern Australia, especially west of the Flinders Ranges. Wandering male spiders are frequently encountered during humid weather in early and mid-summer in Perth suburbs and other localities in Western Australia south of Shark Bay. The species also occurs on offshore islands. Because of their large size, black colouring and aggressive behaviour, they are often mistakenly reported as Funnel-web spiders which belong to the unrelated venomous genus *Atrax*.

During my initial studies on mygalomorph spiders I coined the group name of wishbone spiders to denote a group of diplurine species (of which some are still unnamed) that were behaviourally distinct from morphologically similar groups of species. The wishbone species all make forked or Y-shaped burrows of which one arm has a blind end just below the surface of the ground and can be broken open as an escape hatch by the spider. In various species the distance between the two arms of the fork varies considerably. The burrow of the Black Wishbone spider has a heavy silk lining and the arms are generally closer than in other species (Fig. 1); in some instances the two arms of the silken tube are suspended within a single burrow lumen.

There has always been taxonomic confusion between the genera *Aname*, *Ixamatus*, *Chenistonia* and *Dekana*. Main (1972) in an account of the genus *Stanwellia*, briefly diagnosed the above genera on a combination of characters including the curvature of the fovea, armature of the first tibia in males and the type of burrow constructed. *Chenistonia* has a straight fovea whereas it is usually procurved in the other three genera. In addition, *Chenistonia*

frequently has a sheen on the body and legs and especially on the carapace due to a thin clothing of fuscous hair. The males of both *Chenistonia* and *Dekana* have on the first tibia a large median spur which bears one large spine. Occasionally a second, more slender, spine occurs underneath the base of the spur especially in *Chenistonia*. The spur is lacking in *Ixamatus* which has an array of spines on the first tibia. This sexual character difference of males is consistent with the condition found in the type species of *Chenistonia*, *Dekana* and *Ixamatus*. However the holotype of the type species of *Aname*, *A. pallida* Koch, is a penultimate instar male, allegedly from the same locality (Bowen, Queensland) as the type species of *Ixamatus*, *I. varius* (Koch), and there was the possibility that the specimen was an immature *Ixamatus*. Main (1972) distinguished *Aname* as comprising those species with a procurved fovea and in which the male has a tibial spur and which build a simple (i.e. unforked) burrow. Subsequently Raven (1980) after examination of the syntypes of *I. varius* (Koch) has shown that both males and females of the species can be readily distinguished from other diplurine genera by the presence of a tarsal rod. Likewise I have noted the presence of a tarsal rod on the holotype of *I. broomi* Hogg from Hillgrove, New South Wales. This reasserts the distinction of *Aname*, as suggested by Main (1972), but still does not readily distinguish it from *Dekana* except on behavioural criteria e.g. the burrow structure.

Dekana and *Aname* are, on present morphological analysis, similar and can justifiably be synonymised. A supporting observation is that in southern Western Australia there occurs a species which does not build a wishbone burrow but in which the female spiders closely resemble those of the Black Wishbone spider. To date no males have been collected from such



Figure 1.—Exposed burrow and silk lining of a Black Wishbone spider, *Aname diversicolor* (Hogg) (9.5 km west of Zanthus, Western Australia, 29 January 1956, BYM 1956/65) W.A. Museum 80/1775. Note spider protruding from bottom of tube; burrow 26 cms deep.

burrows. Furthermore there are several other "species pairs" in which one species builds a wishbone-like burrow and the other constructs a normal oblique or vertical nest. It appears that at least some wishbone burrowing species have been independently derived from species with simple burrows. The wishbone burrow, as a character, is therefore not *shared* but *convergent*. Although each of the wishbone burrowers represents a particular behavioural level and together comprise a related group of species they are not a monophyletic group and thus do not constitute a separate genus. The biology and evolutionary radiation of these species will be discussed elsewhere. In conclusion *Dekana* is synonymised with *Aname* Koch and the type species of *Dekana*, *D. diversicolor* Hogg, is placed in *Aname*.

Some species previously transferred from *Aname* to *Dekana* by Main (1972) should be reinstated in *Aname* e.g. *aurea*, *grandis* and *armigera* (Rainbow and Pulleine); *Dekana wonganensis* Main is transferred to a new genus (Main, in prep.).

Type locality of *Dekana diversicolor* Hogg

Hogg (1902) gave the type locality of *Dekana diversicolor* as "Deka station, near Blackhall". Neither localities can be traced.

Although most of the other species described by Hogg at the same time came from South Australian localities, I assumed that "Blackhall" could readily have been a misnomer for Blackall in western Queensland. Knowing that the species which I tentatively identified from Hogg's description as *Dekana diversicolor* is widespread in South Australia (at least from the Flinders Ranges westward) and across the southern part of Western Australia, I rationalised that the species could be continuous into south-western Queensland. Hence Blackall would be a possibility as the type locality. However, correspondence with the Queensland Department of Public Lands revealed that no such place as "Deka station" existed (pers. comm. 1957). Correspondence with the appropriate Government departments in New South Wales, Victoria and South Australia indicated that there was no such locality as Deka station in these states either. However in 1965, I learned from the Government Botanist in Queensland that there was a Delta station near Blackall in western Queensland. Thus it is possible that Hogg misread the locality label of his specimen which could have referred to Delta Station, Blackall. On the other hand, Robert Raven (pers. comm.) suggests that "Blackhall" could have been a misreading of "Blackhill", a locality near Adelaide in South Australia. A further possibility, and the most likely one, is that the original locality was "Colona station, Blackhill" which is in South Australia.

Location of the type specimen

The type (holotype, ♂) of *Dekana diversicolor* Hogg has never been located. Although many of Hogg's types are in the British Museum (Natural History) including types of other species described at the same time, the type of *Dekana diversicolor* has not been found in the collections (G. Owen Evans pers. comm. 1957). Subsequent searching by myself (1958 and 1979) and by F. Wanless has not revealed its presence. Nevertheless Hogg's description appears to be adequate for identification at least of male specimens. By association, females have subsequently been attributed to the species.

Taxonomy of *Dekana* Hogg 1902

Strand (1913) regarded *Dekana* as a subgenus of *Chenistonia* and described the species *Chenistonia (Dekana) atra* from central Australia. This species I regard as a synonym of *Aname diversicolor* (Hogg). The type (holotype, ♂) of *C. (D.) atra*, is in the Senckenberg Museum, Frankfurt (sighted in 1958). Prior to my sighting the specimen, Dr O. Kraus kindly figured the palp for me in order to compare it with specimens collected in Western Australia and South Australia. The salient characters of the spined spur on the first tibia and the characteristic palpal structure, consisting of a simple bulb and long tapering embolus (Fig. 2A) and the faint down of silvery hairs on the carapace identify it as conspecific with *A. diversicolor*. In the British Museum (Natural History) there is also a male specimen from central Australia (collected from Hermansburg by H. J. Hillier, no date) which closely agrees with Strand's type of *atra*. Additional specimens have been sent to me from localities near Alice Springs. It should be noted however, that the type of *atra* differs in several points from Hogg's figures (Hogg 1902, text fig. 27) and description of

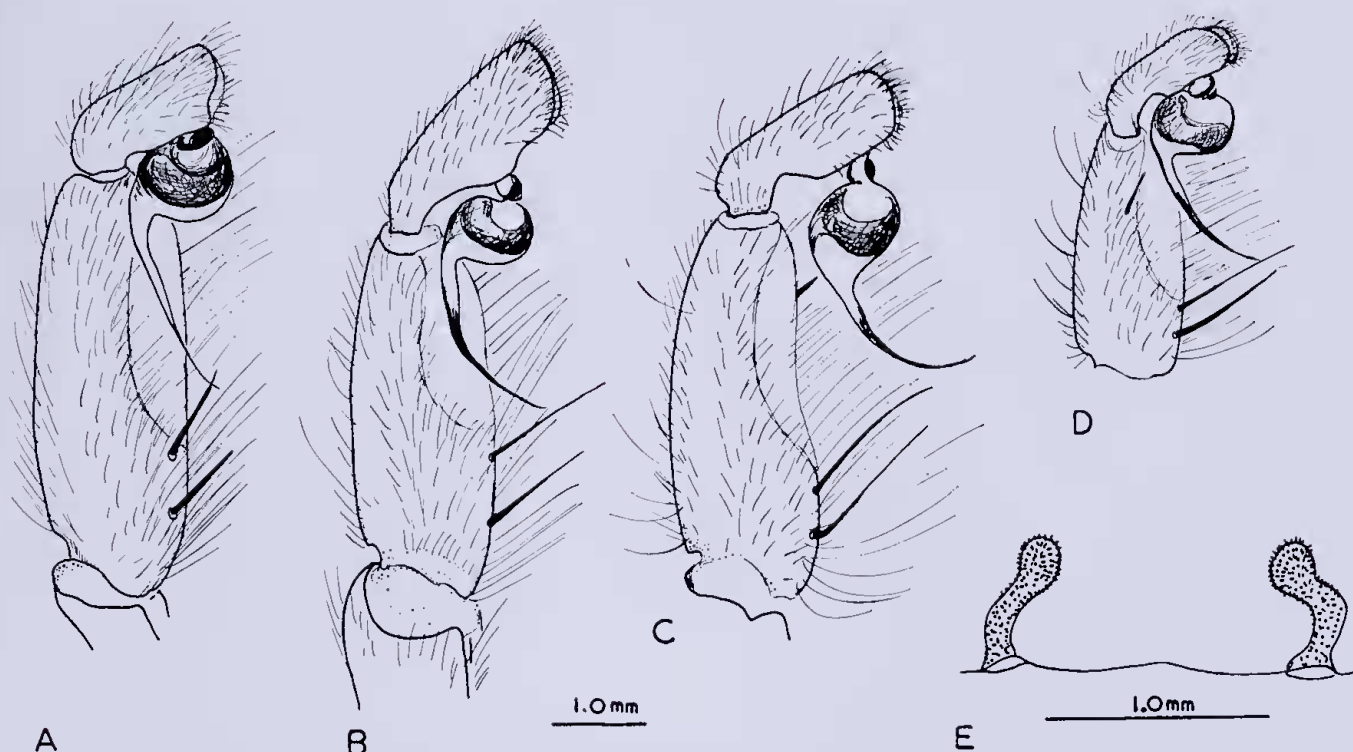


Figure 2.—A, B, C, D, Retrolateral views of right palps of males. A.—Holotype of *Chenistonia (Dekana) atra* Strand. B, C, D.—*Aname diversicolor* (Hogg). B.—Neotype, SAM N1980196. C.—BYM 1953-522 (Magooinya, Balladonia station, Western Australia, 10 December 1953. B. Y. Main) W.A. Museum 80/1776. D.—BYM 1957/1 (Rottneest Island, Western Australia, 17 January 1957, M. J. Littlejohn) W.A. Museum 80/1777. E.—Internal genitalia of female *Aname diversicolor* (Hogg); BYM 1952/637 (26 km northwest Elliston, South Australia, 28 December 1952, B. Y. Main) W.A. Museum 80/1778.

D. diversicolor as follows: *atra* clearly has two proximal retrolateral spines on the palp tibia whereas these are lacking in Hogg's figure of *diversicolor* (which appears to be a retrolateral view); the stigma or embolus of *atra* is relatively longer, tapering and only very slightly curved whereas it is shown to be pronouncedly bent in Hogg's figure of *diversicolor*. If the specimen was dry (as indeed several of the early Australian mygalomorph types were) it is possible that the stigma had become bent as a result of desiccation and that the basal spines may have become detached. Furthermore, it has been noticed that in freshly collected specimens of the Black Wishbone spider retrolateral spines may be present or absent, or reduced to bristles and the curvature and length of the stigma varies (see Figs. 2 B,C,D.)

Rainbow and Pulleine (1918) erected a new genus *Sungenia* for Strand's species *C. (Dekana) atra*. The distinguishing features of *Sungenia* were stated to be a procurved fovea (as distinct from straight in *Chenistonia*) and marginal sternal sigilla (as distinct from removed from the margin in *Dekana*). *Sungenia* was stated to resemble *Chenistonia* and *Dekana* in the presence of a tibial spur on the first leg of the male.

During 1954 and again in 1965 while visiting The Australian Museum I examined the available mygalomorph types of Rainbow and Pulleine but was unable to see their specimen of *Sungenia atra* (Strand) from Balingup until May 1979. It has a procurved fovea but the posterior sternal sigilla are not marginal. I regard it as conspecific with Hogg's species *Dekana diversicolor* and Strand's

species *Chenistonia (Dekana) atra*. Although labelled as "TYPE", Rainbow and Pulleine's specimen is not a type, since the type of Strand's species *Chenistonia (Dekana) atra* properly becomes the type of the genus *Sungenia*. It is doubtful whether Rainbow and Pulleine even regarded their specimen (Australian Museum K41258) as a type, as the original label is lost and has been replaced by an ink label marked as follows "*Sungenia? (Chenistonia)? atra*". This specimen agrees generally with Hogg's description of *Dekana diversicolor* and the type of *Chenistonia (Dekana) atra* Strand. Previously Main (1972) had tentatively synonymised *Sungenia* with *Chenistonia*.

Tribe Anamini Simon 1889

Aname Koch 1873

Aname Koch, 1873. Die Arachniden Australiens, p. 465. Type species by monotypy *A. pallida* Koch, 1873. Die Arachniden Australiens p. 465-7. Pl. XXXV, Type locality: Bowen, Queensland.

Dekana Hogg, 1902. Proc. Zool. Soc. London, 1902 (Vol. 2): 138. Type species *D. diversicolor* Hogg by original designation. NEW SYNONYMY.

Sungenia Rainbow and Pulleine, 1918. Rec. Austr. Mus. 12: 162. Type species by monotypy *Chenistonia (Dekana) atra* Strand. NEW SYNONYMY.

Diagnosis (modified from Main 1972): Carapace usually with procurved fovea, broad with rounded sides; pronounced eye tubercle; labium broad and anteriorly indented, usually without cusps; cheliceral furrow with teeth on promargin only, apart from basal group of small granular teeth; occasionally with pseudo-rastellum of stout "teeth" on inner, apical edge of paturon; maxillae with numerous

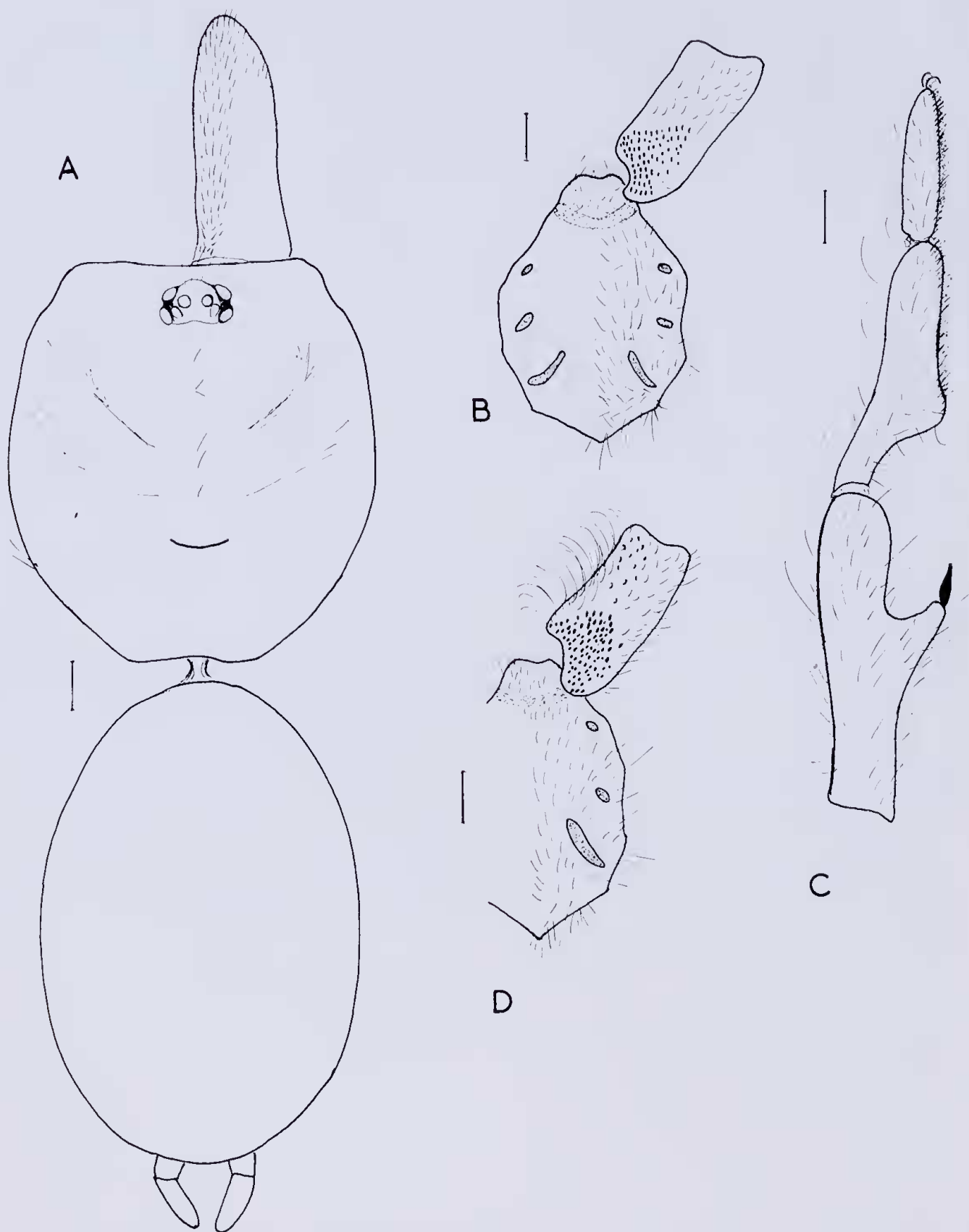


Figure 3.—*Aname diversicolor*. A, B, C. Neotype, SAM N1980196. A.—Outline of carapace and abdomen, dorsal view. B.—Sternum, labium and maxilla. C.—Right leg I, tarsus, metatarsus, tibia, retrolateral view. D.—Female (BYM 1952/631), SAM N1980195 sternum, labium and maxilla. All scales = 1.0 mm.

cuspsules over whole proximal area; posterior sternal sigilla large, broad oval or acutely elliptical and sometimes non-marginal; bipectinate superior tarsal claws; a proximal pair of spines on palp tarsus of female; leg tarsi without spines; scopula on tarsi of palp and at least tarsi I and II; tarsi without a "tarsal rod" (as defined by Raven 1980); two pairs spinnerets, posterior lateral pair relatively long with tapering terminal segment. Male with a spine-bearing spur in mid-region of tibia I; palpal tibia with few spines; embolus thin and tapering to a point. Burrow simple or forked i.e. "wishbone" shaped. Males generally wander during summer.

The genus is widespread throughout Australia and also occurs in Tasmania.

Aname diversicolor (Hogg), new combination

Dekana diversicolor Hogg, 1902. Proc. Zool. Soc. London 1902: 138, fig. 27. Male holotype from Deka Station, Blackhall, lost. Main, 1964, 1967. Spiders of Australia: 48, 49 (Jacaranda). Main, 1976. Spiders: 71, 257 (Collins).

Chenistonia (*Dekana*) *atra* Strand, 1913. Zoologisches Jahrb. 1913: 601. Male holotype from Central Australia in Senckenberg Museum, Frankfurt, examined, NEW SYNONYMY.

Chenistonia *atra* Strand, Main 1972. J. Roy. Soc. W. Austr. 55: 101.

Sungenia atra (Strand). Rainbow and Pulleine, 1918. Rec. Austr. Mus. 12: 162. Male holotype of *Chenistonia* (*Dekana*) *atra* Strand. Rainbow and Pulleine described a male specimen from Balingup, Western Australia, in Australian Museum, examined.

? *Aname comosa* Rainbow and Pulleine, 1918. Rec. Austr. Mus. 12: 143, Pl. 23, Fig. 91. Female holotype from Pichi Richi, South Australia in Australian Museum, examined. Main, 1972, J. Roy. Soc. W. Austr. 55: 100, synonymised *A. comosa* with *Dekana diversicolor*.

? *Aname hirsuta* Rainbow and Pulleine, 1918. Rec. Austr. Mus. 12: 142, Pl. 23, 89, 90. Female holotype from Mallala, South Australia, in Australian Museum, examined. Main, 1972, J. Roy. Soc. W. Austr. 55: 100, synonymised *A. hirsuta* with *Dekana diversicolor*.

Designation of neotype: In the interests of maintaining nomenclatural stability for a common and widespread species which frequently attracts human attention and to which references have already been made in medical literature, a neotype is designated and a new type locality nominated, for *Dekana diversicolor* Hogg [= *Aname diversicolor* (Hogg)].

Neotype: ♂, 26 km north-west of Elliston, South Australia, 20 December 1952, B. Y. Main (BYM 52/636), taken from wishbone shaped burrow. South Australian Museum (SAM) N1980196.

Female: data as for neotype, (BYM 52/631). SAM N1980195.

Description: Large spiders, (with carapace length of 6.5 mm to over 10.00 mm), long-legged, black in life and with sometimes a bluish bloom on abdomen; the carapace broad, with rounded lateral margins (Fig. 3A), it may have a pelt of silvery hairs (especially in males); the fovea is generally procurved but sometimes distorted in males; eye tubercle pronounced; single row of large teeth on inner margin of cheliceral furrow and a group of small basal teeth; posterior sternal sigilla are large, longer than wide, oval or irregular in outline (Figs. 3B,D) and of variable distance from the margin; rastellum teeth sometimes present on inner apical face of chelicerae; numerous cuspsules over proximal third of maxilla (Figs. 3B,D); a few cuspsules occasionally

present on first and second coxae as well as on palpal coxae; stout, spinule-like bristles on prolateral faces of coxae; labium broad and anteriorly indented; legs sparsely spinose, ventral spines on all metatarsi and tibia (lacking on first leg of male), proximal spines present on palpal tarsi of female (usually two) but absent from leg tarsi in both female and male; scopula present on all tarsi and at least partial scopula on metatarsi, divided by a band of bristles on tarsi III and IV.

Male with large median spur bearing a heavy spine on tibia I (Fig. 3C); metatarsus I distally inflated and proximally depressed. Stigma (embolus) of palpal bulb long and tapering (see Figs. 2A,B,C,D). Internal genitalia of female; vesicles unbranched (see Fig. 2E).

Measurements: Male (neotype): Carapace length, 9.7; width, 8.4. Leg formula 4/3.01, 1/2.83, 2/2.54, 3/2.22. Tibial index I, 13.04; tibial index IV, 13.72. Female (BYM 52/631): Carapace length, 8.5 mm; width, 7.5 mm. Leg formula 4/2.8, 1/2.55, 2/2.28, 3/2.03. Tibial index I, 14.77; tibial index IV, 14.94.

The most important diagnostic character is the configuration of the burrow which is a wishbone or Y-shape with the two arms close together and with a strong silk-lining (Fig. 1); occasionally the silk tube alone forms the Y and is suspended in an unbranched burrow. Males mature and wander during early and mid-summer at the onset of humid weather which is frequently associated with spasmodic thunderstorms.

Deposition of specimens: All specimens figured apart from the neotype and female (BYM 52/(631)) are deposited in the Western Australian Museum.

A full account of the morphological variability and geographic distribution is to be presented elsewhere in a comparative account of the wishbone-building and related species of *Aname* in south-west Western Australian and South Australia.

Acknowledgements.—Thanks are due to the following who made available relevant type specimens: M. R. B. Gray and the late A. Musgrave of The Australian Museum, Dr G. O. Evans formerly of the British Museum (Natural History), F. Wanless BM(NH), and Dr O. Kraus of the Senckenberg Museum. Dr L. Koch of the Western Australian Museum made available specimens for comparison with freshly collected material. Robert Raven read an early draft of the manuscript.

References

- Hogg, H. R. (1902).—On some additions to the Australian spiders of the suborder Mygalomorphae. *Proc. Zool. Soc. London.*, 1902 (2): 121-142.
- Main, B. Y. (1972).—The mygalomorph spider genus *Stanwellia* Rainbow & Pulleine (Dipluridae) and its relationship to *Aname* Koch and certain other diplurine genera. *Jour. Roy. Soc. W. Austr.*, 55: 100-114.
- Rainbow, W. J. and R. E. Pulleine (1918).—Australian Trapdoor Spiders. *Rec. Austr. Mus.*, 12: 81-169 24 plates.
- Raven, R. J. (1980).—The Australian mygalomorph spider genus *Ixamatus* Simon (Dipluridae: Diplurinae) and its affinities. *Bull. Br. arachnol. Soc.*, 5: 43-49.
- Strand, E. (1913).—Über einige australische Spinnen des Senckenbergischen Museum. *Zool. Jahrb.*, 35: 599-624.
- Note added in proof.**—While the above was in press Raven (1981) in a review of the diplurine genera synonymised *Dekana* Hogg and *Sungenia* Rainbow and Pulleine with *Aname* Koch but retained *Aname atra* (Strand) as a separate species. See Raven, R. J. (1981). A review of the Australian genera of the mygalomorph spider subfamily Diplurinae (Dipluridae: Chelicerata). *Aust. J. Zool.*, 29: 321-63.